ABSTRACT

Charles University in Prague
Faculty of Pharmacy in Hradec Králové
Department of Biochemical Sciences

Candidate: Bc. Markéta Marešová
Supervisor: Ing. Petra Matoušková, Ph.D.
Title of diploma thesis: Effect of alpha-humulene on adhesion of breast cancer cell line MDA-MB-231

α-humulene is a sesquiterpene contained in the essential oil of Chinese Bayberry (*Myrica rubra*), which has various biological effects. The aim of this thesis was to study the cell adhesion of tumor cell line MDA-MB-231, and the effects of α-humulene on expression of cell adhesion molecules. Furthermore, the cytotoxic effect of α-humulene on this cell line was verified.

Effect of α-humulene on cell proliferation was evaluated by neutral red uptake test (NRU test) and by xCelligence system. Cell adhesion was also continuously monitored by xCelligence. Expression ganges of cell adhesion molecules upon α-humulene treatment were determined by Western blotting and by quantitative polymerase chain reaction on the protein and mRNA levels, respectively.

The proliferation of the cells was significantly affected by α-humulene after 24 hour treatment (IC_{50} 13.6 μg/ml). α-humulene alone caused slightly increased cell adhesion. Adhesion molecules EpCAM and β-cathenin were almost unaffected. Level of ICAM1 mRNA was increased after 12 hours and transcription factor NFκB was affected on the level of protein as well as mRNA.